MARINE REVIEW.

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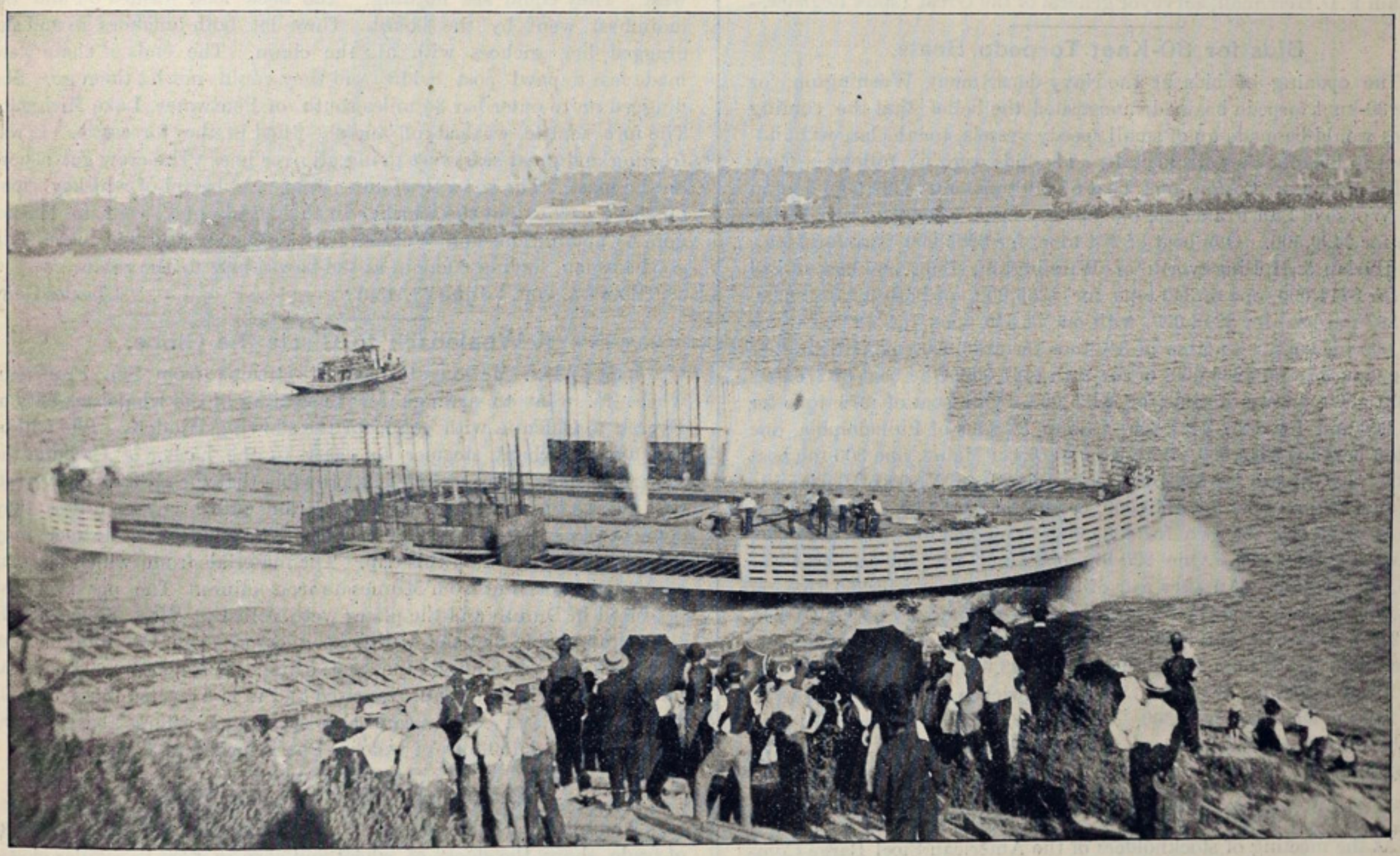
Ohio River Launch with 30-Feet Drop.

The ferry steamer Andrew Christy was designd by Frank E. Kirby, of Detroit, Mich., for service on the Mississippi river at St. Louis, Mo. She is owned by the Wiggins Ferry Co. Hull and cabins were built by Ed. J. Howard, Esq., at Jeffersonville, Ind. Engines were built by the Detroit Dry Dock Co. The ferry is double ended, constructed of steel, 178 feet long, 48 feet width of hull, 12 feet over guard, 7 feet 6 inches deep; draft of water 30 inches. Paddle wheels are independently driven by two sets of compound engines, combined horse power 600. Steam is furnished by three boilers 48 inches diameter, 28 feet long, of the usual Mississippi type, served by an independent feed pump The direct electric light machine was furnished by The Fontaine Co., Detroit, Mich. The boat was built well up on the bank of the river to keep her free when the water was high and at the time of the launch she was about 30 feet above water level, and about 150 feet from the end of ways.



MISSISSIPPI RIVER FERRY STEAMER ANDREW CHRISTY.

The Triangular Course of Our Commerce.

We have been accustomed to sell to Europe enormous quantities of breadstuffs, meats, cotton fiber, and petroleum. To meet the debt in part, Europe has been accustomed to carry her cheap manufactured goods to the South American market, where these goods are exchanged for coffee, hides, and various other wares demanded by the United States. Thus the main currents of trade have followed a triangular course, viz.: from the United States to Europe, from Europe to South America, and from South America to our Atlantic seaports. But now that Europe is buying more and more of her supply of breadstuffs, cotton, petroleum, and other necessities from more recently developed sources of supply in other parts of the world, it will not be so easy for us in the future as it has been in the past to pay for our South American imports by selling wheat, pork, cotton, coal oil, etc., to Europe. It becomes desirable that we should establish direct trade relations with South America and gradually equalize exchanges. This, of course, means that we must learn how to give the South Americans, for the same money, as desirable an array of manufactured articles as they are now able to obtain from Europe. The whole point in the effort to increase our South American market lies in the fact that South America already has so enormous a market with us. If there were not already a tremendous trade on the one side, there would be much less reason for the proposition to develop trade on the other side. It is likely that we shall gradually, though not at once, find a way to sell our own products to South America, to an extent approaching our purchases of South American wares. This will require direct lines of American shipping.—American Monthly Review of Reviews for July.

Final "A" Bad for Ships.

Insurance underwriters look askance at vessels which have a final "a" in their names. The first letter of the alphabet is considered a hoodoo when it ends the name of a deep sea ship. Many of the most serious wrecks of the last year have been of vessels carrying the hoo doo letter. One day, says the San Francisco Examiner, the telegraph announced that the British ship Androsa, from that port for Liverpool with one of the most valuable cargoes that was ever carried out of that harbor, was lost within a few leagues of her destination. The next day word was received that the Orealla, bound fromVictoria for Liverpool, had been swept by heavy seas and badly damaged. Her mate and one sailor were drowned. The wires told on the same day of the total loss of the British ship Villanta and the drowning of her master near Freemantle, and a few days later the papers gave the news of the loss of the steamer Wallapa and of the beaching of the Dora. During the last two or three years the most serious wrecks on the coast were of vessels whose names ended with the hoodoo letter. The wreck of the Colima was the most horrifying of all. Then came the loss of the steamer Columbia, and a few weeks later the passenger steamer Umatilla ran ashore and narrowly escaped destruction.

Prizes for Captains and Mates.

Lake masters and mates who show the greatest proficiency in the study of navigation as taught by W. J. Wilson of the United States hydrographic office, are to be rewarded by substantial cash prizes offered by George L. McCurdy, the insurance man. The idea is that fewer wrecks will occur if the captains are better schooled in practical navigation. There are to be two first prizes of $50 for each class, and three prizes of $25 for each class. The school, which is at 20 Michigan ave., Chicago, was organized by Mr. Wilson in the winter of 1895-'96 at the suggestion of C. D. Sigsbee, U. S. N., then United States hydrographer at Washington. As soon as the captains found that the school was to teach something of practical value, they encouraged the project, although at first they regarded it as an experiment. During the last winter of the sixty-five pupils twenty-five were captains and mates, some of whom had grown gray in the service. Mr. Wilson said that the lake captains as a class are a very intelligent body of men, and readily acquire a knowledge of the subject. Mr. Wilson added:

"Every hour which the men who are intrusted with lives and valuable property devote to the systematic study of the science of navigation, which is absolutely necessary for the lake region, adds just so much to the safety of all who sail the lakes, either as passengers or members of crews, as well as to the vessel herself and the cargo she carries." The examinations are to be subject to the supervision of Captain F.D.Herriman, surveyor general of the Great Lakes Register.

Bids for 30-Knot Torpedo Boats.

The opening of bids at the Navy department, Washington, for three 30-knot torpedo boats demonstrated the belief that the coming navies would be made up of small speedy vessels, for the largest builders put in bids for these little craft. The bids were as follows: Geo. Lawley & Son of Boston, one boat of 410 tons, for $280,000; Union Iron Works of San Francisco, one 330-ton boat, $245,250; two of the same for $490,500. One boat of 284 tons, for $225,000; two for $440,000; Harlan & Hollingsworth of Wilmington, Del., one boat of 276 tons for $214,000, one of 340 tons for $235,000, or both for $449,000. One 267-ton boat for $212,000, with one of 340 tons for $235,000, or $447,000 for both. Another of 340 tons for $236,000, and still another of the same size for $233,500, or for both $467,000. One boat of 276 tons for $215,000, or two of same for $425,000. One boat of 276 tons for $213,000 and for two $421,000; Cramp & Sons of Philadelphia, one 340-ton boat for $245,000; Bath Iron Works of Maine, one 300-ton boat for $217,900, or two for $432,000; Columbian Iron Works of Baltimore, Md., one 230-ton boat for $210,000, or two for $415,000. One 230-ton boat for $195,000, or two for $385,000. One 260-ton boat $225,000, or two for $444,000. One 230-ton boat and one 260-ton boat for $435,000 for both. Another pair of boats of 230 tons and 260 tons at $411,500 for both; the Gas Engine and Power Company of New York, one 235-ton boat for $210,000, or two for $410,000; John H. Dialogue of Camden, N. J., one 243-ton boat for $243,000, or two for $478,000. One 270-ton boat for $269,000; Wolff & Zwicker of Portland, Oregon, one 249-ton boat for $214,500, or two for $424,000; Chas. Hillman Shipbuilding and Engine Company of Philadelphia, one 270 ton boat for $230,000.

Another Dock at West Superior.

At the meeting of stockholders of the American Steel Barge Company at West Superior, recently, President Colgate Hoyt said that orders had been given to continue investigations and borings and estimates of cost for a new dry dock to be the largest on the lakes. He added that the policy of the company was a waiting one—ready to take advantage the instant the first turn for better times comes, and said that they were figuring on putting improved machinery into the works and putting the yards in such shape that with the least possible expenditure of money the best ships could be produced.

A report from the state department shows that the coal product of the United States in 1896 was 190,639,959 short tons, valued at $195,557,649, against 193,117,530 short tons, valued at $197,799,043 in 1895 a decrease of 2,477,571 short tons in amount and of $2,241,394 in value. The decrease in product was entirely in Pennsylvania anthracite. The output of bituminous coal shows an increase of about 1,750,000 tons.

Japan has ordered a battleship of 11,000 tons to be built on the Clyde, on the same style as the 15,000-ton British battleship Jupiter, of seventeen knots.

Wreck of the Neptune.

Editor Marine Review:—I notice in the Review of June 24 an article, "A Wreck Full of Rum." Friend Quinn may be a good diver, but he did not dive deep enough to get at that rum story. In Novmber, 1839, the craft I was sailing in was laid up. I saw Capt. Sims, master of brig Neptune. He told me he was going to take on a cargo for Chicago, and said, "Come and ship with me and I will pay you $2.50 per day for the round trip." I said that was better pay than he got as master. She was in Buffalo unloading wheat, which was loaded in Milan, Ohio. She had on 9,000 bushels. I went into hold and passed up pails of wheat which was weighed into canal boats. She had another canal boat alongside with goods for Chicago. Capt. Webster was mate keeping tally of the wheat. I was called up to keep tally of goods as they came on deck from the canal boat. When the wheat was out we had half of a cargo in for Chicago. We had a good run to Detroit, taking only 30 hours. She took on flour and pork there. When the hold was full we put the pork on deck with the whiskey for Mackinaw island. I was stowing flour below. The hooks of the tackle slipped and a barrel fell on my foot. I told Captain Sims I was not fit to go, and so I got him a good man in my place. The captain paid my passage to Erie on the steamer. The Neptune got to Mackinaw all right, but when they got above Point Betsey there came on an awful storm with blinding snow from the west. They could see nothing. The deck load washed off and the mainmast went by the board. They let both anchors go and she dragged her anchors with all the chain. The ends of chain were made fast to pawl post below and they could not let them go. She dragged on to outer bar 3½ miles south of Pentwater, Lake Michigan. The fore scuttle washed off and she filled in the forecastle. It was freezing and great seas were going all over her. The crew got ashore on the mast. The snow was quite deep. A barrel of whiskey came on shore. They put the whiskey in their boats and went to Muskegon. Captain Sims and Webster both had cork legs but were both good seamen, having come in at the hawse-pipe to the cabin.

Sombra, Ont., June 28, 1897. Charles Gale.

A Whaleback to Circle the Globe.

Capt. Alex. McDougall has just returned from San Francisco, where he went to arrange for the sailing of the whaleback City of Everett to Calcutta with grain for the starving Hindoos. She will be the first merchant steamer to carry to the harbor of Calcutta the American flag. It is regarded as probable that the crew of the Everett will not see the American flag during the entire voyage unless they come across an American man-of-war. The whaleback steamer may go around the world on this trip. The material from which she was constructed was dug from Minnesota iron mines. The pig iron was produced in Duluth and the plates were rolled at West Superior. It is not improbable that she will take a cargo from Calcutta for New York and come around via the Suez canal. It is about 9,500 nautical miles to Calcutta from San Francisco and it is expected the trip will occupy forty days. The steamer has six month' stores aboard, 1,200 tons of coal and 150 tons of water. She is loaded to 22 feet.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, June 26, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	4,101,000	7,678,000
Duluth	1,531,000	15,000
Milwaukee	106,000	3,000
Detroit	23,000	37,000
Toledo	231,000	746,000
Buffalo	953,000	527,000
	6,945,000	9,006,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 912,000 bushels of wheat and 144,000 bushels of corn.

Located on the south shore of Lake Erie, contiguous to the Nickel Plate road, are many country homes that will accommodate summer boarders. Send to B.F. Horner, general passenger agent of the Nickel Plate road at Cleveland, O., and he will forward you a list on receipt of a two cent stamp. 56 Jul 15

The World's Record for Speed.

There was no sleight of hand performance in the speed record made by the Ellide. Her designer said last winter that she would develop surprising speed because she would have the steam to give her the necessary number of revolutions. During the trial the Mosher boilers had 250 pounds of steam and her propeller made 650 revolutions.

The Ellide, a steam launch owned by E. Burgess Warren, of Philadelphia, and designed by Charles D. Mosher, now lays claim to the world's record by covering a measured mile on the Hudson, under forced draught, in 1 minute and 38 seconds. This is at the rate of over 36½ miles an hour, and eclipses the speed record of the Turbinia, recently made in Europe. The trial was made down stream in about slack water, with a light breeze blowing from northwest by north. This run was a preliminary one, and the boat carried 22 passengers. The contract called for a maximum speed of 30 miles an hour, but if, on her official trial trip, which is scheduled for about a week hence, she is as fast as she has proved already, the Philadelphia yachtsman will pay quite a snug bonus on the contract price, it being in the agreement that he was to pay $1,000 per mile for every mile in excess of thirty which the Ellide could make in an hour. The Ellide is 80 feet long, 8 feet 4 inches beam, and has a draught of 3 feet 6 inches. The boat is of composite construction, the planking being of double skin mahogany. All the fastenings are composed of Tobin bronze bolts. Her frames and scantlings are entirely of steel. She is subdivided by five steel bulkheads into five water-tight compartments, and is also supplied with a number of copper air tanks. She is fitted with a patent quadruple expansion engine having cylinders 9 inches, 13 inches, 18 inches, and 24 inches by a 10-inch stroke. Aside from the main propelling engines there is an inboard surface condenser, also six special designed engines for running the feed pumps, air pumps, circulating pump, etc. The boiler is of the water tube type, its casing being of polished brass. It consists of two steam drums placed over two water drums and connected together by a great number of solid drawn steel tubes, so arranged that the gases pass twice the length of the boiler among the tubes before entering the stack, thus practically absorbing all the heat from the gases of combustion. The boiler is subdivided into two independent sections, so in case a tube should give out in either section the boat can still be run by the remaining section, or half boiler power. There is also provided two powerful ejectors for pumping out the bilge.

One fare excursions via the Nickel Plate road July 3rd, 4th and 5th. Ask agents. 138—4

Steel Ceiling.

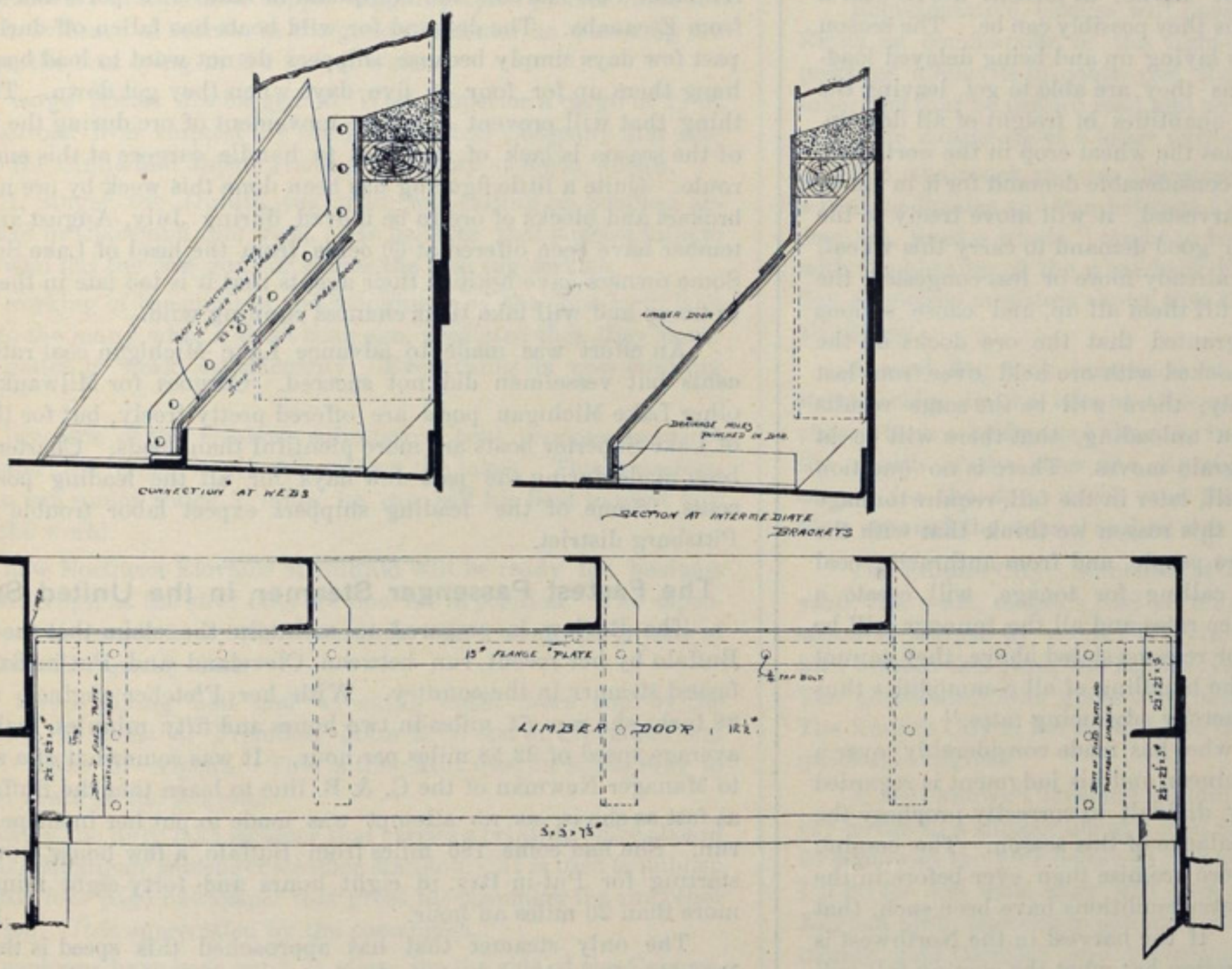
Wood is being displaced everywhere possible in the construction of steel vessels on the lakes, and it will be only a question of time until steel hatch covers are used, leaving only wooden timber heads and windlass beds. D. E. Ford believes that fluted or curved iron can be used for ceilings, having mineral wool fitted in to keep out the heat.

In a number of cases wood has been torn out of vessels constructed several years ago and steel replaced. This is particularly true of the Minnesota fleet, Mr. H. G. Dalton advocating the use of steel wherever possible.

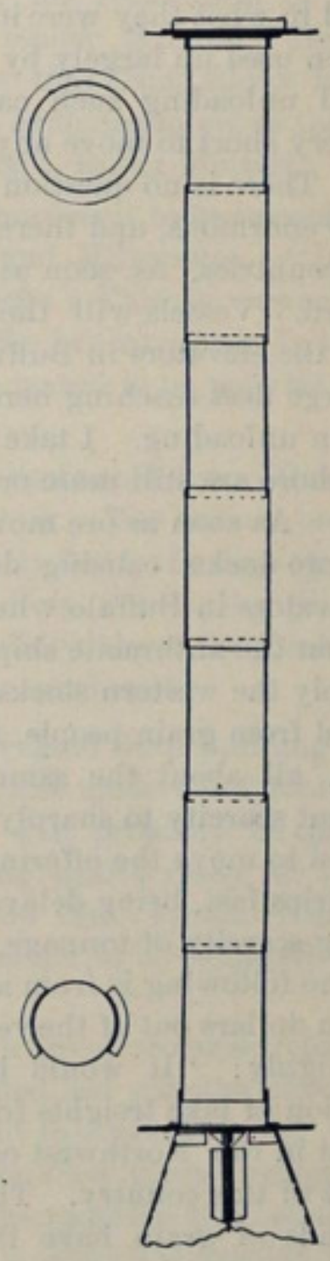
Improvements in channel floors and frames, thicker tank tops without ceiling, and bilge ceiling of steel in place of wood, steel wrecking wells, etc., are all advances in steel ship construction made in the last few years, on the lakes.

The illustration on this page shows a steel ceiling fitted in the barge Constitution, built by the American Steel Barge Co., W. Superior. It was designed by R. Logan at the suggestion of Capt. Mallory, but the barge company made a slight change in the design.

There is just enough of the ceiling to cover the top-side frame brackets and keep the water-course at the tank side free from grain and ore.



STEEL CEILING.



STEEL WRECKING WELL.

The illustration at the right of the steel ceiling shows a steel wrecking well built in the barge Constitution in place of wood. Wrecking wells are fitted in all the modern lake vessels. If a vessel is wrecked with a cargo, the cargo has to be cleared to the one side or enough taken out of the hold to enable the pump to work effectively where no wells are fittted. The top of the well is covered with wood, so that it is easily removed with a hatchet and in a short time gotten ready for pumping.

"I was being shown over the royal yacht at Portsmouth by an Admiral, and he explained the various points of interest. At last we came to the Queen's cabin. 'Here,' said he, 'is where the Queen found a middy trying on her bonnet at the looking-glass, and she gave bim a box on the ears, which resounded right away to the quarter deck.' 'Well,' I said, 'that was better than ruining his career for a boyish prank.' 'Oh!' he replied, 'he didn't get off with a smack. He was sent home next day, and his people were given a hint to take his name off the books at once. It was a pity, for he was a jolly little fellow and didn't mean any harm."—Figaro.

4th of July excursions, July 3rd, 4th and 5th, at one fare via the Nickel Plate road. 139—4

Opinions on the Season's Business.

ORE FREIGHTS OF FROM 80 TO 90 CENTS PREDICTED FOR SEPTEMBER.

The Review presents below the opinions of three prominent lake business men on the prospects of the freight market. One is from a heavy ore shipper, and is a classic. Another shipper who was asked for his opinion said that it would not be consistent with what he was trying to do. One of the most level-headed brokers on the lakes is the author of the second opinion while the third is from one of the largest vessel owners on the lakes. A letter was expected from a Chicago grain shipper but did not arrive in time for this week's paper.

The following from an ore shipper sums up the situation as to ore in the clearest and most terse manner possible: "To transact a season's business in five months and deliver seven month's output in four, can be done on paper. It may also be done by the mines and possibly by the boats, but it cannot be done by the docks or the railroads. A large amount of July and August tonnage will be 'hung up' at dock, and ore sellers will pay 80 to 90c. to get carried in September and October what they expect to get down in July and August at 60c.

The following is from a prominent vessel broker who is well qualified to express an accurate opinion on the grain situation: "I think the conditions in the lake freight market at present are as near a parallel to what they were in 1895 as they possibly can be. The season has been used up largely by vessels laying up and being delayed loading and unloading such cargoes as they are able to get, leaving the time very short to move any large quantities of freight of all descriptions. There is no question but what the wheat crop in the northwest will be enormous, and there being considerable demand for it in European countries, as soon as it is harvested, it will move freely to the seaboard. Vessels will then be in good demand to carry this wheat, and as the elevators in Buffalo are already more or less congested, the first large fleet reaching here will fill them all up, and cause serious delay in unloading. I take it for granted that the ore docks on the south shore are still more or less blocked with ore held over from last season. As soon as ore moves freely, there will be the same results at the ore docks, causing delays in unloading, that there will be at the elevators in Buffalo when the grain moves. There is no question but what the anthracite shippers will, later in the fall, require tonnage to supply the western stocks. For this reason we think that with the demand from grain people, from ore people, and from anthracite coal people, all about the same time calling for tonage, will create a sufficient scarcity to sharply advance rates and all the tonnage will be required to move the offerings. For reasons stated above, they cannot make trips fast, being delayed in the handling of all commodities thus causing scarcity of tonnage, and thereby advancing rates."

The following is from a man who has made considerably over a million dollars out of the vessel business, and his judgment is regarded very highly: "It would be very difficult to correctly prophesy the condition of lake freights for the balance of this season. The coming harvest in the Northwest offers more promise than ever before in the history of this country. The climatic conditions have been such, that all kinds of grain have thrived. If the harvest in the Northwest is such as we think, there is no question but what the coming fall will see freight rates a great deal higher than at the present time. The coal for the Northwest has not been moved in any such quantities at the present time, as in former years, and there must needs be a large volume of tonnage engaged to meet the demands. At the present time, however, nearly, if not quite all of the tonnage on the lakes, is in active service. Being mid-summer, with no fear of storms or gales, everything is favorable for the movement of an immense amount of ore. The ore companies and combines have any quantity of ore ready for shipment, and they are taking advantage, and straining every nerve to get the product forward on the present cheap rates. The supply of ore, however, that has been moved up to the present time, is much less than at previous periods in recent years. With the coming harvest, and with the short time to move coal to the Northwest, a great deal of tonnage will be diverted from the ore trade. This will have a tendency to raise the ore freights. I think that ore freights will go to at least $1.00 per ton, from the head of the lakes. If the freights do not materially advance, I am certain that a great deal of tonnage will be laid up early, and that there will not be many ships in commission by September 15. The vessels that are depending on the present wild rates, are not any more than keeping even, if they are doing this. It makes no difference whether the vessels are large or small. The relative earnings in proportion to the expenses are about the same. In other words, the cost of operating, insurance, tug bills, etc., for the large vessels are proportionately higher, than the same expenses for the smaller vessels. This has always been so, as the smaller vessels are usually engaged in certain classes of trade, that are not touched by the larger ships.

"I look for the freights on all commodities to advance enough the last of this summer and fall, so that the vessels will yield enough profit to pay at least a simple interest on their investment."

Lake Freight Situation.

There has been some improvement in the grain trade at the head of the lakes during the past week. Duluth and Ft. William have both been in the market for tonnage and the rate to Buffalo has been advanced to 1½ cents. Chicago has taken care of considerable tonnage and only for the bad condition of the docks and the scarcity of cars at the Lake Erie receiving ports which has caused the movement of ore to be checked, the prospects for an advance in ore carrying charges would be very good. Up to a few days ago the feeling was very firm and some owners predicted an advance all around before the close of the present week. Rates are unchanged at 50 cents from Duluth, Ashland, Two Harbors and Marquette to Lake Erie ports and 40 cents from Escanaba. The demand for wild boats has fallen off during the past few days simply because shippers do not want to load boats and hang them up for four or five days when they get down. The only thing that will prevent a heavy movement of ore during the balance of the season is lack of facilities to handle cargoes at this end of the route. Quite a little figuring has been done this week by ore men and brokers and blocks of ore to be moved during July, August and September have been offered at 60 cents from the head of Lake Superior. Some owners have notified their agents that it is too late in the season to tie up and will take their chances running wild.

An effort was made to advance Lake Michigan coal rates to 25 cents but vesselmen did not succeed. Cargoes for Milwaukee and other Lake Michigan ports are offered pretty freely, but for the head of Lake Superior boats are more plentiful than loads. Charters have been made during the past few days for all the leading ports at 20 cents. Some of the leading shippers expect labor trouble in the Pittsburg district.

The Fastest Passenger Steamer in the United States.

The Review is prepared to maintain the claim that the City of Buffalo by her recent run between Cleveland and Put-in-Bay is the fastest steamer in the country. With her Fletcher engines, making 28 turns she ran 64 miles in two hours and fifty minutes, making an average speed of 22.58 miles per hour. It was somewhat of a surprise to Manager Newman of the C. & B. line to learn that the Buffalo was as fast as she is, as no attempt was made to put her in shape for the run. She had come 180 miles from Buffalo, a few hours previous to starting for Put-in-Bay, in eight hours and forty-eight minutes, or more than 20 miles an hour.

The only steamer that has approached this speed is the Mary Powell. It is known that she has made 21 miles an hour during a spurt. Her average for one season was 19 miles an hour. It has been claimed that she made 25 miles per hour, but this is doubted unless a considerable current assisted her.

The Buffalo has three or four more turns in her engine that have not been let out. It is expected that these will give her a speed of 24 miles an hour and put her in the same class as the famous speedy channel steamers of Europe. The boilers in the Buffalo are fitted with the Howden hot draft.

The Pittsburg & Conneaut Dock Co., have contracted with the McMyler Mfg. Co., Cleveland for a 12-leg direct unloading apparatus, to be completed three months from date of contract. This is the largest contract let for dock apparatus for some time. There will be new features about it which are expected to make it the speediest plant of the kind on the lakes. It will be used to take ore direct from the hold of the vessel and place it in cars.

The following market prices are quoted on metals: Magnolia anti-friction, 25 cents per pound, No Name 18 cents and Mystic 8 cents; all f. o. b., New York or Chicago.

An excursion will be run to Chautauqua lake, July 2nd, via the Nickel Plate road. Ask agents. 163

Around the Lakes.

The new revenue cutter, Walter Q. Gresham will participate in the unveiling of the Logan monument in Chicago on July 22.

Kingston, Ont., board of trade may give a bonus for a second elevator. The plan is to get the Lake Ontario grain trade away from Prescott, Ont.

The steamer Douglass has been libeled in the United States court at Toledo by the Second National bank. The amount involved aggregates $16,274.68.

The big Vulcan steam shovel at the Mountain Iron mine loaded 210 cars in ten hours recently. This is equal to the mining and loading of 12,000 tons of ore.

An increase of not less than twenty inches in the lake level is noticeable on Lake Erie. Two years ago the water was so low that it seriously inconvenienced vessel captains.

Another bottle has been found with a story of a Sandusky-Detroit car ferry scheme blown in it. The man who was pushing the Toledo-Detroit scheme threw it overboard evidently.

The recovery of a piece of copper weighing 2,400 pounds from the Pewabic is evidence of success in the greatest submarine wrecking job of the age, the boat lying in 160 feet of water.

The barge Miztec discharged at West Superior a cargo of 1,000 tons of railroad iron shipped by the Illinois Steel Company and consigned to the China and Japan Trading Company at Kobe, Japan.

W. H. Singer, the Duluth tug man, was calling on business acquaintances in Cleveland this week. He believes that success falls to the man who has the best gun, or rather the best tug service.

The working of the engines and machinery of the Poe lock is a surprise to the many who, a short time ago, predicted that they never could be gotten to work satisfactorily. Everything is now running smoothly.

The inventor of the Oshkosh sub-marine boat proposes to run it under water 700 miles in a cruise down the lakes. This is useless. If he can run under water 7 miles he can sell his boat to most any navy in the world.

The new Northern Elevator at Buffalo will be ready for business for the fall crops, as the steel bins are now all in position. The capacity has been increased to 3,000,000 bushels, there being thirty bins of 100,000 bushels capacity each.

The Myers diving bell and wrecking outfit were sold by the sheriff to A. F. Price of Fremont, John E. Wood of Cleveland and Lewis T. Kline of Alpena. This is the outfit used in attempting to locate the wreck of the Norman.

Probably the only lake steamer that carries a printing office aboard is the Lake Michigan passenger steamer Manitou. It is used to publish a neat little four page newspaper that gives the passenger list and other information. It is appreciated by the passengers.

Six pontoons have been sunk in place by the side of the Cayuga, 100 feet below the surface of Lake Michigan and Capt. Reid expects the remaining two will be placed by the first of July. He has been greatly delayed of late by the continued windy weather.

The headquarters of the Tenth light house district will be removed from Cleveland to Oswego or Buffalo, and the work will be in charge of Major Stanton, Oswego. The move was made to relieve Col. J. A. Smith, who has a large amount of harbor work on hand.

An itemized statement ofthe cost of carrying grain from Duluth to New York aboard ship is as follows: Duluth elevator charges, ⅛; inspection and weighing, ⅛; insurance and exchange, ¼; lake freight, 1⅝; canal freight (and Buffalo charges), 3; loading canal to steamer, 1¼.

Capt. Charles J. Holmes, formerly in the Wallula, is undertaking an unusual and extra hazardous trip in sailing around the world in a 22-foot sloop. There is no doubt as to his ability as a navigator, but this will not help him keep a small boat right side up in an ocean gale.

It is announced that the Wisconsin and Michigan Car Ferry company is to abandon the route between Peshtigo and South Chicago and transfer its boats to run from Manitowoc and Benton Harbor, Mich., thus making a more direct lake-and-rail connection to the seaboard.

As the war department declared Chicago river navigable for only 16 feet the city cannot be compelled to lower the tunnels at present. A depth of 20 feet will have to be approved before anything can be done. This would probably compel the government to pay the expense of the change.

Capt. Alex. Campbell has chartered the steamer Roanoke to a circus and will cruise around Lake Michigan. He says that if the cages ever get shifted in a sea and break, and the lions and tigers get loose, then it will be time to pipe all hands to the rigging and try to rig up the hot water hose.

The Toledo & Ann Arbor Railway company has at last secured a terminal for an all-winter route between Frankfort and the Michigan peninnsula by purchasing a line of railway built by the Chicago Lumber company from Manistique to within six miles of Munising. A third ferry may be built.

The Canadian steamer Queen of the Lakes started from Toronto on a particularly long voyage. She has a cargo of corn, which she will discharge in Glasgow, Scotland. The steamer will go direct to Kingston, where part of the cargo will be lightered to enable her to get through the St. Lawrence river canals. This grain will be reloaded at Montreal.

Representative Corliss will insist upon the restoration of Capt. Rioux as commander of the light-house tender Mrigold. He has procured affidavits to contravert the charge that Capt. Rioux is not sober and that he cannot read and write, his evidence to prove that he can write consisting of a letter written by Capt. Rioux himself.

The whaleback steamer Christopher Columbus is to be turned into a floating theatre and run between Chicago and Milwaukee. "In the deep sea, lived a whale," ought to be a favorite. This in connection with the blessing of the whaleback Everett for her voyage to India by San Francisco ministers shows that they are bound to be popular with all classes.

A mad dog took possession of a small schooner from Halstead street bridge to the lake at Chicago last week. The animal jumped aboard from a bridge and the crew immediately fled to the rigging. At the mouth of the river the captain picked up a belaying pin and started for the dog, which was tearing wildly about the deck. A blow stunned the animal and he was thrown overboard.

The Empire City, launched at the Cleveland Ship Building Co's yard, last week, makes a fleet of four first class modern 400-foot steel steamers owned by A. B. Wolvin. This will probably be the last hull built at this yard, the Lorain yard being nearly ready for work. The christening was gracefully managed by Mrs. James Wallace. The Empire City is the second lake cargo steamer to be equipped with quadruple engines.

A well known Cleveland captain with a great propensity for silver writes to a shipper about a load stating that last year the price was 90 cents and the year before $1.25 and $1, but this year it is not what I'll go for, but what they will give me. He then gives a recipe for English plum pudding to contain such ingredients as con fidence, sound money, gold standard and protection. As a result the opinion is being passed that he will soon undergo a change of heart politically.

The new steel steamer Niagara built by F. W. Wheeler & Co. is fitted out and built especially for carrying pulp wood in the most economical manner. She has eight large hatchways which reach almost across the deck, and each hatchway is provided with a chain wood conveyor. These conveyors are driven by shafting, stretched just below the railing of the vessel, running the entire length of the deck. They are so arranged that they swing on a hinge from the shaft, and all the men in the hold have to do is to pile the wood on the conveyors. It is possible to unload at the rate of 100 tons an hour.

Capt. Ed. Mooney was wheelsman on the Pewabic when she sank and below is his testimony. He says that at the time the mate ordered him to "steady a port;" that he put her wheel a very little a-port; that he looked at the compass and found that they were swinging to starboard; that the Meteor was near them at that moment and showed her green bright light; that he was then ordered to put the wheel hard a-port, which he did, with the help of the first porter, who came into the pilot house; that the wheel was no more than hard a-port when the Meteor struck them; that he could heave the wheel in twenty minutes with help.

Appointments of captains and engineers for 1897, vest pocket size, $1.00. Order from the Marine Review, Cleveland, Ohio.

MARINE REVIEW

DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio, by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, $1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,792	924,630.51
Sailing vessels and barges	1,125	354,327.60
Canal boats	416	45,109.47
Total	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30. 1891	204	111,856 45
" " " 1892	169	45,968.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
" " " 1895	93	36,352.70
" " " 1896	117	108,782.38
Total	864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (*From Official Reports of Canal Officers.*)

	St. Mary's Falls Canals.			Suez Canal.		
	1896*	1895*	1894	1896	1895	1894
Number of vessel passages	18,615	17,956	14,491	3,409	3,434	3,352
Tonnage, net registered	17,249,418	16,806,781	13,110,366	8,560,284	8,448,383	8,039,175
Days of navigation	232	231	234	365	365	365

*1895 and 1896 figures include traffic of Canadian canal at Sault Ste. Marie.

An eastern engineer interested in cargo handling machinery came to the lakes to introduce a specialty and incidentally learn the possibilities of introducing his machinery. After looking over the different apparatus at Cleveland he concluded that as far as loading cargoes the lakes were equipped with machinery that was perfection. It has taken years to convince business men on the coast of the magnitude of lake commerce and the size of lake vessels, while a great many Englishmen treat it all as a joke. But the rapidity with which cargoes are handled will have to be drilled into men not familiar with the business. On the coast where it requires a week to load 5,000 tons of coal into a vessel they will hardly believe it is done on the lakes in ten hours. But when American foreign commerce commences to grow then coast dock owners will be compelled to come to the lakes for perfected machinery. One Cleveland concern now supplies the ship yards of the United States with cranes for handling material quickly.

Unloading has taxed the inventors of machinery more than loading and the taking of 4,200 tons of ore from the hold of a vessel in 12 hours is an accomplishment equalled nowhere else in the world. Machinery to surpass even this speed is being planned or designed and the ship owners and dock owners of the world can come to the lakes if they want machinery to handle cargoes in the least possible time.

A Detroit naval architect in commenting on lengthening steamers says that it all depends on the wave which is pulled up at the stern. In her first form this wave may be right under her stern post. In that case it gives her buoyancy at the stern, which counteracts the effect of the resistance of the water pushed up at the bow, besides which it allows sufficient water for her screw to play in. He is also quoted in the Detroit Free Press as follows: "The impression prevails among some people here that all screw boats can be successfully lengthened, but that all side-wheelers lengthened have been failures. This belief is due to the fact that a certain well-known steamer, since being lengthened, has lost at least two miles an hour in speed; otherwise she cannot be complained of. But this is because her power is entirely too light for her enlarged hull, so it is claimed. The steel side-wheeler City of Chicago, was lengthened materially, and her model was also changed. She has been a better boat ever since."

Lake shipbuilders should co-operate with Congressman Smith of Michigan in his effort to abrogate the treaty with Great Britain that prevents the building of warships torpedo boats, etc., on the lakes. While he was not successful in his efforts last year, it is expected that he will be re-appointed on the house committee of foreign affairs and will be in position to take the matter up again. He has had a conference with the new assistant secretary of state, and has succeeded in getting that gentleman interested in the matter sufficiently to lead him to promise that the matter of possibiltity of a new agreement between the countries will be investigated with a view to making possible the building of all kinds of naval vessels on the lakes that are not too large to be taken through the canals to the coast. And permission to pass these vessels through the Canadian canals must be included in the new treaty or else it will be useless to build vessels here that cannot be taken away from the lakes.

A Pacific coast paper asks how long it will be before America builds a steamship propelled by a turbine wheel? Unless present arrangements fall through it will not be longer than next season before a steamer on the Great Lakes will be propelled by a turbine engine. It is said that the principle of working steam over twice was first used on the old steamer Empire State, plying between Buffalo and Sandusky, as early as 1848.

Boiler Steel.

The United States government engineers have been receiving boiler plate for use in some of the gunboats of the navy on which the specifications are probably the most severe of any which are now issued. These specifications require in a plate 1 7-16 inches thick a tensile strength of 65,000 pounds and an elongation of 24 per cent. in longitudinal, and 22 per cent. in transverse test pieces, and in a bending test the specimen is required to bend double to a U-shape, with a distance of 1 7-16 inches between the arms.

During some experiments made by the Carbon Steel Co., of Pittsburg, plates were rolled which were 17-16 inches thick, 152 inches long, 114 1-2 inches wide, and weighed 7,200 pounds. Two of these plates were rolled and one of them sheared up and test pieces taken from different points. One piece gave a tensile strength of 65,200 pounds and an elongation of 25 per cent. in eight inches. Another transverse test piece bent over solid upon itself. From this it will be seen that this steel more than meets the government requirements in not only the tensile strength and elongation, but also in the bending test. The most remarkable pieces in this collection, however, were corkscrews or twist drills 1 7-16 by 5-8 inches and which were bent cold in order to show the ductility of the steel. A chemical analysis of the plate is as follows: Carbon, .31; Manganese, .35; Phosphorus, .029; Sulphur, .023. A careful examination of the samples of the ordinary run of steel manufactured by the company fails to reveal any sign or failure of the metal, and the curves in the twisted pieces are apparently as regular as they would be if cut on a lathe, which would not be the case if the metal was not uniform in texture.—American Manufacturer.

The Oceanic's Stern Frame.

The Darlington Forge Company are now engaged in preparing the stern frame and brackets for the new White Star liner from steel castings made by them, and which are largest of the kind ever produced in this country. The stern frame is in one piece and as a casting weighs 41 tons, and when completely machined and ready for erection will weigh 35 tons. Its height is 53 ft. by 24 ft. 3 in. over the keel piece, the section of the post being 21 in. by 11 in. Attached to this frame are the after brackets, a huge casting also in one piece, which will weigh 55 tons as it leaves the foundry, and 45 tons when machined and erected in position. The height of the flanged portion of the bracket—that which is attached to the frame of the ship—is 26 ft., whilst the width from centre to centre of the bosses is 23 ft., the bosses themselves being 4 ft, 3 in. in diameter, by 5 ft., 7 in. deep. The forward brackets, which are entirely built within the plating of the vessel, will weigh 30 tons when machined and erected.—Shipping World.

The schooner Hercules, which was driven ashore during a storm in November, 1816, the gale having been so severe that all on board perished, was probably the first large wreck on Lake Michigan. The Hercules was one of several schooners that the government had chartered to garrison a new fort on the present site of Chicago, built in place of one that the Indians had destroyed four years before—at the time of the massacre.

Future of the Lake Grain Trade.

[Continued from last issue.]

The movement of flour and grain from the regions west of the Mississippi presents an entirely different problem. In this territory the railroads leading to the gulf will undoubtedly carry a great deal of grain to the gulf ports that formerly went to the Atlantic ports over the rail-and-lake route and the all-rail lines. Roughly speaking, the grain grown in the territory north of the east-and-west line passing through the southern boundary of Iowa will continue to go over the eastern rail and water lines. And probably the grain produced in northwestern Missouri will continue to move over the old routes. On the other hand, the grain grown in Missouri south of the Missouri river and in the southern half of Kansas and in all the region lying south of these two states, is equally sure to go, if intended for export, by the south-bound lines to the gulf. Between these two regions lies a district of debatable territory formed of the northern half of Kansas, the southern part of Nebraska, the extreme southwestern part of Iowa, and of northwestern Missouri. This region includes much of the best agricultural land of the country west of the Mississippi river. It may therefore be expected that the eastern lines will not relinquish the traffic of this territory without a struggle. As the railroads leading to the gulf have erected or are erecting terminal facilities for the handling of grain on a large scale, particularly at their southern termini, they may be expected to wage a spirited contest for the traffic of the disputed territory, and as a consequence grain rates to the Atlantic seaboard and to the gulf will probably fall in the near future. The most southern of the east-and-west trunk lines belonging to the Central Traffic Association have been forced by the association to maintain rates, and as a result they have seen much of the traffic which they at one time handled go to the gulf by the river-and-rail lines. The southern lines of the Central Traffic Association did not regard this traffic as valuable enough to warrant them in breaking loose from the association, and the association preferred to lose some traffic to the gulf lines rather than reduce rates on all east-bound traffic to such a point as would prevent grain from the southern limits of their territory from finding an outlet through the gulf ports. Although the Central Traffic Association viewed with equanimity the diversion of a portion of its traffic to the gulf ports it does not follow that the association will much longer permit the diversion to the gulf ports of the traffic originating in the territory which has supplied the railroads forming the association with much of their east-bound freight. Up to the present time the rail-and-water lines and the all-rail lines to the Atlantic seaboard have regarded themselves as the natural heirs to the whole of the traffic originating in or destined for the entire West. To the lake carriers and the managers of the east-and-west trunk lines the westward course of empire has always presented itself as new traffic for them. For many years there has been an increasing tendency for commerce to move on east-and-west lines. The opening of the Erie Canal in 1825 gave the first decisive impulse to commerce to move across the country instead of down the Ohio and Mississippi rivers. In later years the construction of the Great trunk lines, parallel to the northern water route formed by the great Lakes and Erie Canal, strengthened a movement which had already become firmly established. On the Atlantic seaboard New York and Philadelphia have come to be looked upon as the natural outlets and inlets for the commerce of the whole country; and, in a like manner, Chicago, by reason of its favored position on the lakes and its excellent railroad facilities, has come to be viewed as the natural distributing and receiving point for the entire west.

This idea, that Chicago was to be the gateway through which the commerce to and from the west would move, received a severe shock some years ago. As the farmer has pushed westward and still farther westward it has become easier and easier to make a flank attack upon the old lines of commerce. This has been rendered doubly easy where the new regions settled have been either north or south of the great east or west line of movement. It has already been shown how with the westward and northward migration of the wheat fields the wheat and flour traffic avoided Chicago and sought the more northern routes. Most of this business still goes through our chief Atlantic ports, but with the rapid enlargement and improvement of Canadian transportation facilities now in progress it will be surprising if Canadian ports, notably Montreal, do not secure a larger portion of the export grain business.

Let us now return to the movement of flour and grain through the gulf ports. The old east-and-west routes have recently been brought face to face with a new and serious situation in the central west and southwest. The lines extending northward from the gulf are not disposed to allow the east-and-west lines to control this great traffic of the trans-Mississippi region. The gulf roads hold that the central west and southwest should export their surplus products through the gulf ports and receive imports through the same cities. This proposition is nothing short of revolutionary—it means a breaking away from the old channels of shipment through Chicago and New York and other eastern cities; further, it means that the northern water route and the eastern trunk lines are no longer to be the dominant power in moving the products of western farms. During the past year the railroads running to the gulf have been increased in number by the construction of the short line—the Kansas City, Pittsburg and Gulf Railroad. This line, which was designed to make Kansas City independent of the eastern routes, extends from Kansas City almost due south to Port Arthur (Texas) at the head of Sabine Lake, an arm of the gulf. In the contest with the east-and-west lines this route will be found in the van. The distance to tide water from Kansas City is much less by the Port Arthur route than by the eastern rail routes, and therefore very much less than by the way of the Great Lakes. But too much must not be expected from this route simply on the ground of its being much shorter than the eastern lines to tide water. It need hardly be said that cost of service does not vary as the distance, and that rates are not fixed on a mileage basis. Easy grades, straight tracks, a large traffic in both directions, and cheap fuel are fully as important as the question of distance. So far as the first two items are concerned the Port Arthur route will compare very favorably with any of the eastern trunk lines; it can also secure fuel as cheaply as most of them. In respect to the remaining point, however, the eastern trunk lines have the advantage. Not only will the traffic over the new line be much less, at least for some time, than over the eastern trunk lines, but it will also be very largely in one direction unless this particular road is more successful in securing northbound traffic than the other gulf roads. If no freight can be found for the cars going north, the traffic going south must pay the cost, not only of its own movement, but that of hauling back the empty cars as well. It must be admitted that the outlook for this road securing a double haul is better than that of most, if not all, of the other railroads running north from the gulf. The Port Arthur route passes through some of the best timber land on the continent, and it may, therefore confidently expect a large north-bound traffic in ties and lumber. As it passes through two large coal fields it may also hope to move large quantities of coal. Aside from these main items the managers of this line expect to haul a portion of the imports consumed in the territory tributary to their railroad and also hope to develop a considerable traffic in early fruits and vegetables.

But even supposing that the Port Arthur route can haul grain from Kansas City to the gulf for less than the east and-west roads can carry it to the Atlantic seaboard, can this line develop a large export business? Are there not adverse circumstances which will fully counterbalance the advantage of a low rate to the gulf? Will not higher ocean rates from the gulf ports and the unfavorable climate of the gulf region prevent the growth of a southern export movement? In answer to the first of these questions it may be said that ocean rates are less unfavorable from the gulf ports now than they were formerly, and that as the amount of freight which is being offered to vessels is increasing, there will be more steamship lines to southern ports and rates will be still further lowered. At this late day it is hardly necessary to answer the second question. The large amount of capital which has recently been invested in southern terminals for handling grain, by persons familiar with the climate, and the immense movement of grain through gulf ports during the year 1896 ought to be sufficient proof that the gulf climate does not rise as an obstacle to prevent the development of an export trade through the gulf ports.

Luce's "Seamanship" is a book that is specially suited to assist young officers of the naval reserve. It is being used by naval reserve organizations all over the country. It is a standard work, selling at $10, and will be mailed to any address at that figure by the Marine Review, 409 Perry-Payne building, Cleveland.

Now that the Lake Ontario grain movement will be increasing, masters will want Lake Ontario general chart No. 61 and coast chart No. 1, as well as St. Lawrence river charts Nos. 4, 5 and 6. The five will be sent by the Review to any address by express for $2.

In General.

W. S. McCabe of a Tacoma, Wash. stevedore firm has patented machinery with which 5,000 tons of Oriental merchandise, tea, silk, etc., can be unloaded in 24 hours.

The Dominion Atlantic Ry. is adding a twin-screw $200,000 steel steamer to their Bay of Fundy service. She will be one of the finest steamers in tbe Canadian coasting trade.

The big four-masted sea-going ship Shenandoah left Baltimore recently for San Francisco with a cargo of 4,666 tons of coal, which is the largest cargo of coal ever carried out of Baltimore in a sailing vessel. The vessel is drawing 26½ feet of water, and is expected to make a fast passage.

Official statistics show a deficit of a million marks in the Baltic canal business. During the past year 19,900 vessels of 1,848,450 tons passed through this waterway. The number of vessel passages exceeds those of the Soo canal over a thousand, but the tonnage is only about one-tenth as much.

The French navy committee has approved the report favoring the proposal to open an extraordinary credit of 260,000,000 francs, 20,000,000 francs for repairs to warships, 40,000,000 francs to establish harbors of refuge and 200,000,000 francs to build new war ships. The committee also decided that the new warships should be cruisers instead of battleships.

Capt. George Howe of the coal barge Delaware, plying between New England and Southern coal ports, is a lover of the bicycle. The barge is 320 feet long, with a good breadth of beam, and so he has at his disposal a 600-foot cycle track, and he uses it. From the rising bow of the Delaware is a coast that carries his wheel way to the stern, and to get back to the other tack is easy. A header excites no sarcastic remarks, as the crew is well trained, and when they feel funny they go into their quarters.

The official Blue Book on British shipping casualities for 1859-6 shows that the total number of sea casualties to vessels belonging to the United Kingdom recorded in 1895-6 (total losses and serious and minor casualties) was 6,872, or 684 less than in 1894-5 and 345 less than 1893-4. The average number of seamen lost in sailing vessels was 1,053, and of passengers 59, against 850 seamen and 48 passengers lost in 1895-6. The average number of seamen lost in steamships was 509, and of passengers 213, against 484 seamen and 426 passengers lost in 1895-6.

Trade Notes.

The neatest and richest thing in flag catalogues, showing all national flags, international code, and different line flags in colors, has been published by DeGrauw, Aymar & Co., 34 South st., New York. It is for the trade only.

The Buffalo Forge Co., Buffalo, N. Y., has done something cute in issuing a pocket edition of their 400-page library-bound catalogue. They were printed principally for engineers and they will find a demand for them as soon as the engineers learn of the valuable tables in them.

The C. H. Haeseler Co., Philadelphia, Pa., is furnishing a complete compressed air plant for the Newport News Ship Building & Dry Dock Co., consisting of a 20x24-inch duplex steam compressor, 24 pneumatic caulking and chipping tools and 15 pneumatic drills and reamers.

The many friends and patrons of the Garlock Packing Co. will be pleased to hear of the continued prosperity of this enterprising firm. Notwithstanding the fact that business generally is not brisk, the Garlock Packing Co. finds it necessary to run their plant over time to keep up with their orders which they are filling promptly. The company has new plans drawn which will greatly increase the capacity of their Palmyra factory and have already broken ground for additional buildings which when completed will nearly double their plant.

The Detroit Graphite Mfg. Co., of Detroit, Mich., has recenty acquired the title to the graphite mines in northern Michigan from which they have been making their Superior graphite paint. The ore from this mine produces the best pigment for paint so far found. This pigment is reduced to a fineness never before obtained from graphite and none of the graphitic carbon is taken from it to be used for other purposes. It is unassailable by acids, or chemicals of any kind and is of an absolute uniform quality. The Superior graphite paint made by this company has obtained an enviable popularity for use on vessels.

B. P. O. E. excursion to Minneapolis via the Nickel Plate road, July 3d and 4th. One fare. 134—4

OFFICE OF THE LIGHT-HOUSE BOARD, Washington, D. C., June 28, 1897. Sealed proposals will be received at this office until noon on Saturday, the 31st day of July, 1897, for furnishing the materials and labor of all kinds necessary for the construction, equipment and delivery of one first-class composite light-vessel at Philadelphia, Pa. The said vessel must be completed and delivered within ten calendar months from date of the approval of the contract by the Secretary of the Treasury, and bidders are informed that because of the urgent need of the speedy delivery, the element of time to be consumed in construction will be given due consideration in determining the award of the contract, and the contract will be awarded to the lowest best responsible bidder. Each proposal must be accompanied with a certified check payable to the order of the Secretary of the Treasury, in the sum of five thousand dollars ($5,000). The certified check of the successful bidder will be retained until the execution of a formal bond or contract, and the approval of the same by the Secretary of the Treasury, and the certified checks of the unsuccessful bidders will be returned immediately after the proposal of the successful bidder has been accepted.

Forms of proposal, plans and specifications showing what is required, can be had or seen by applying to this office.

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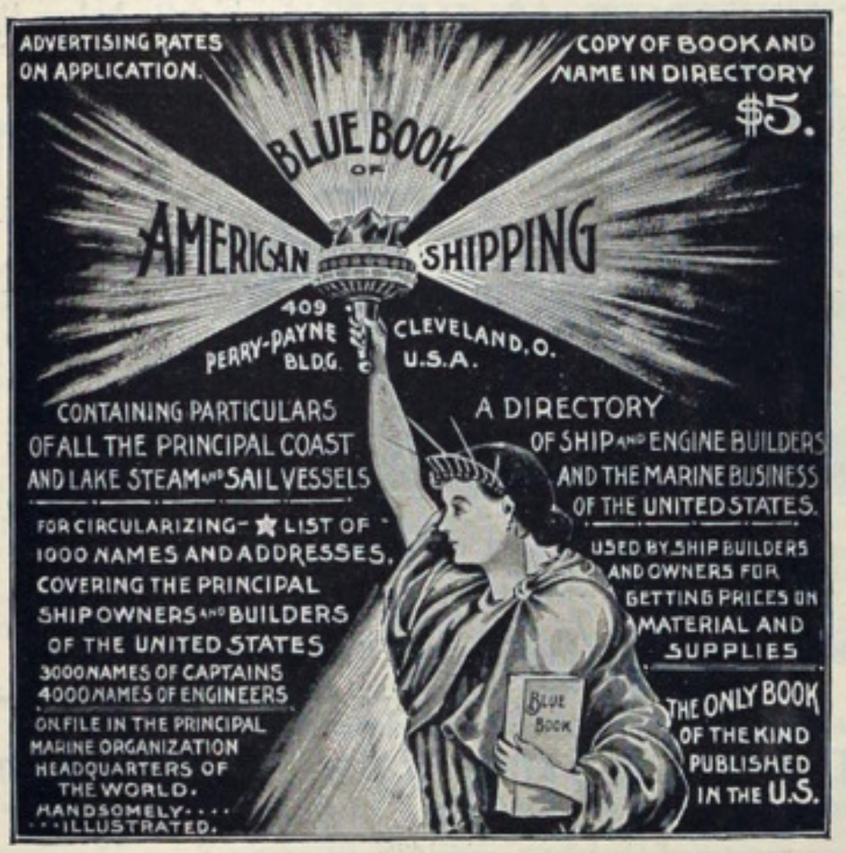
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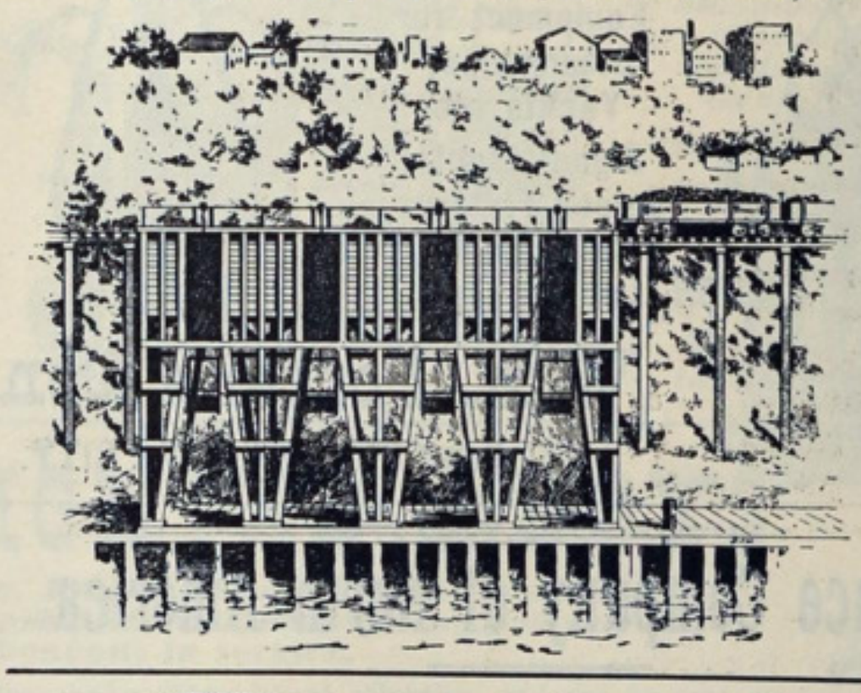

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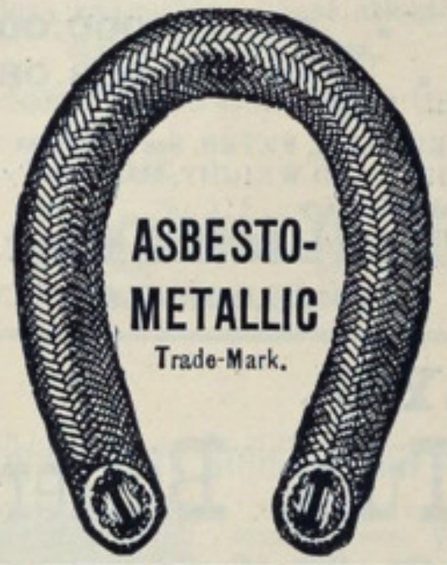

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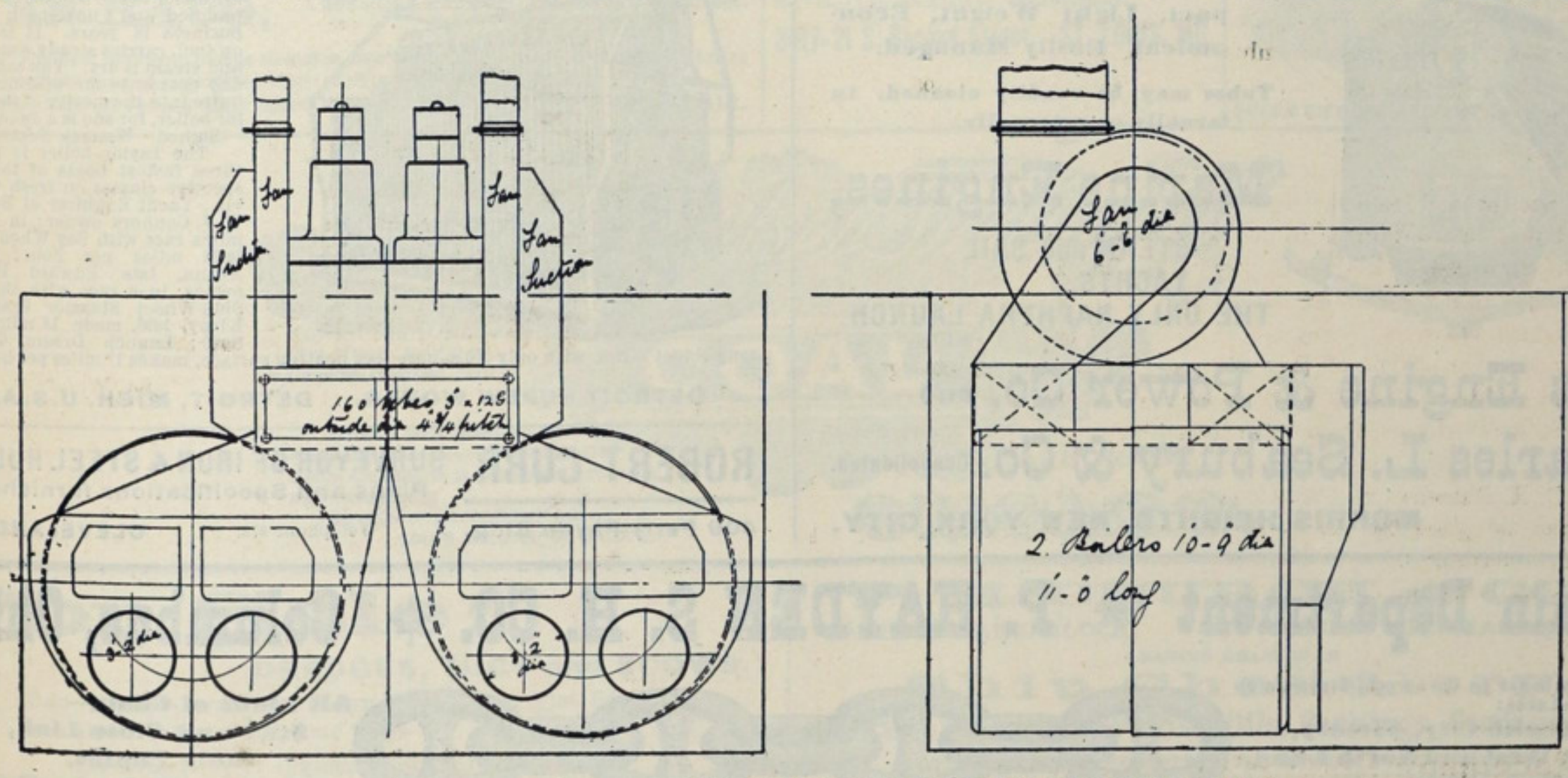

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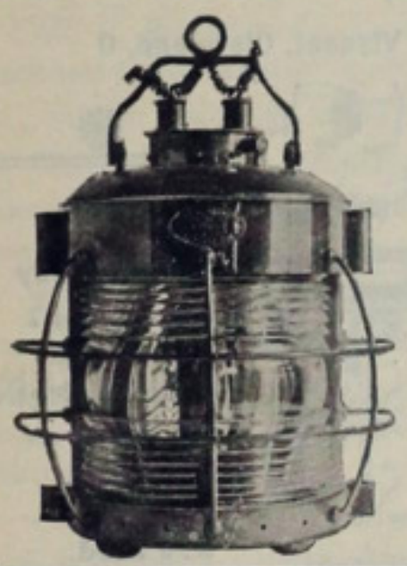

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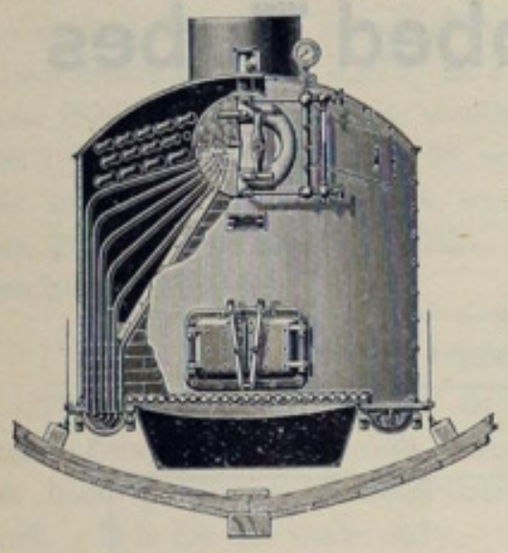

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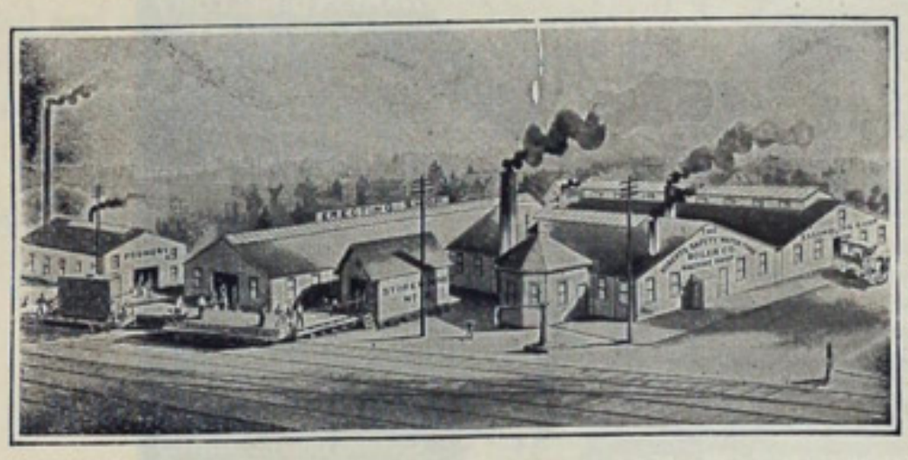

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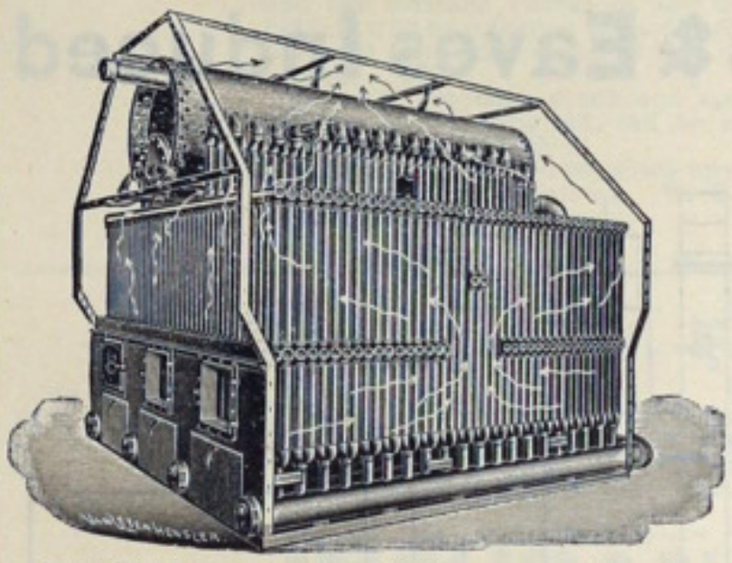

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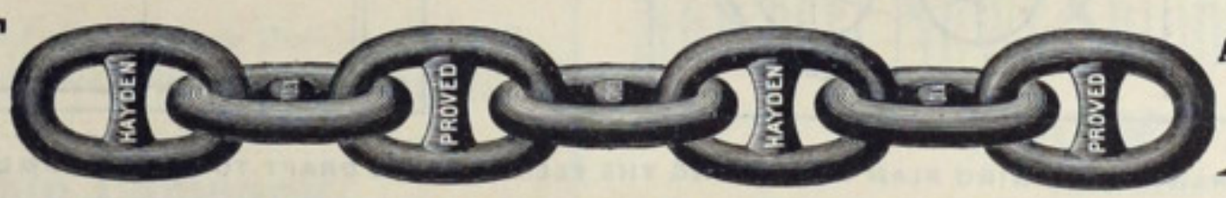

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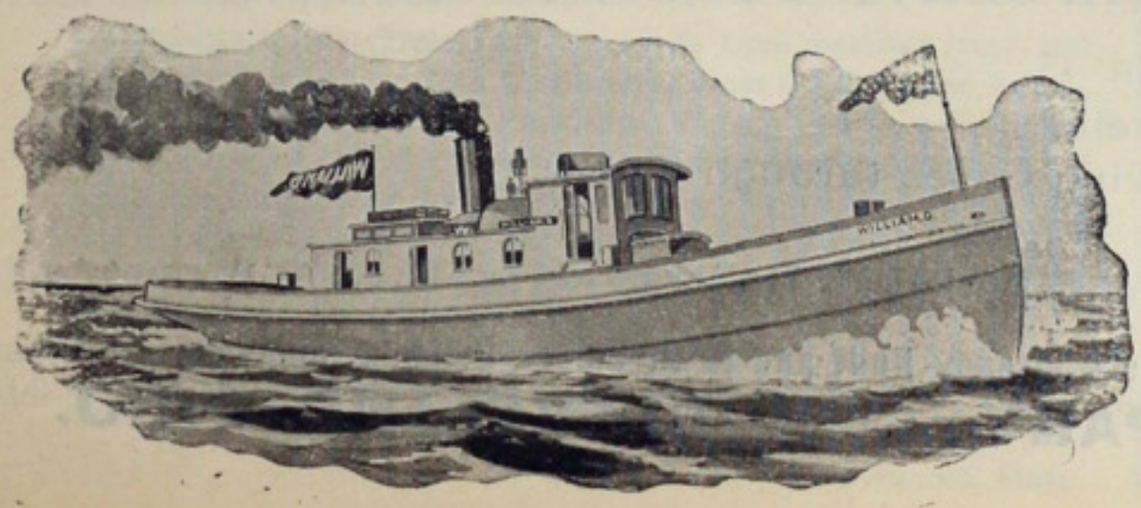

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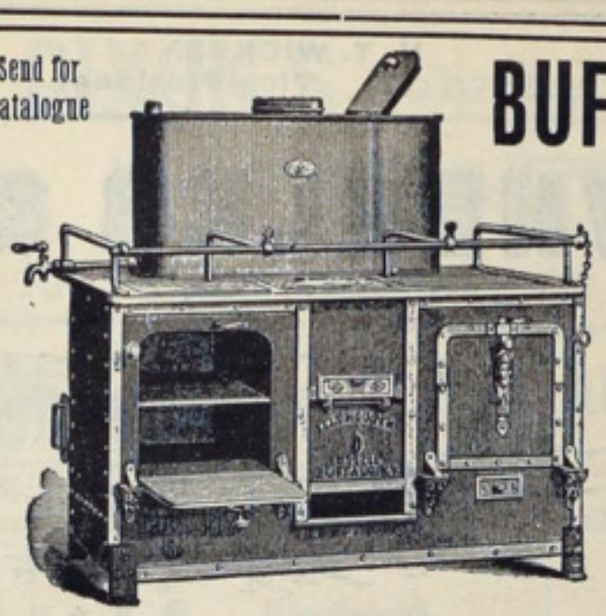

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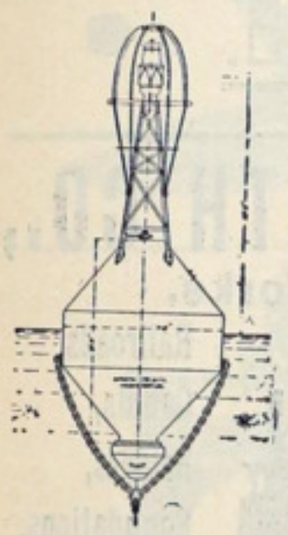

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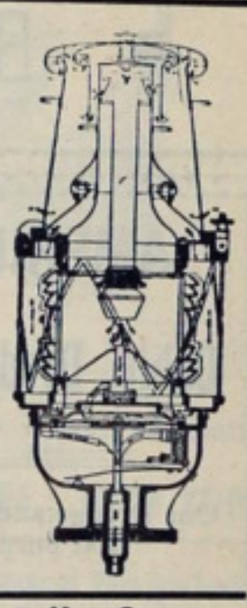

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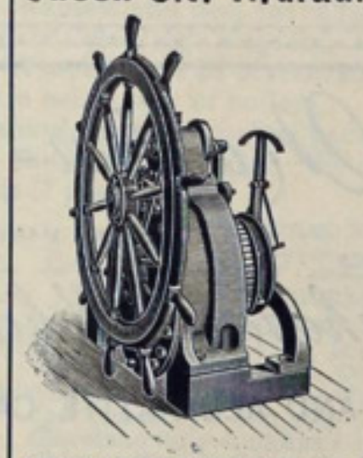

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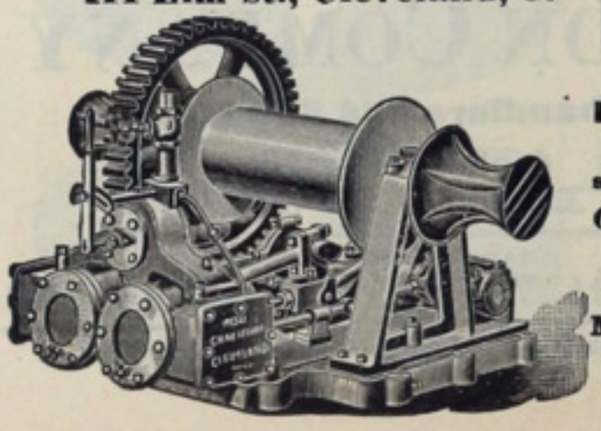

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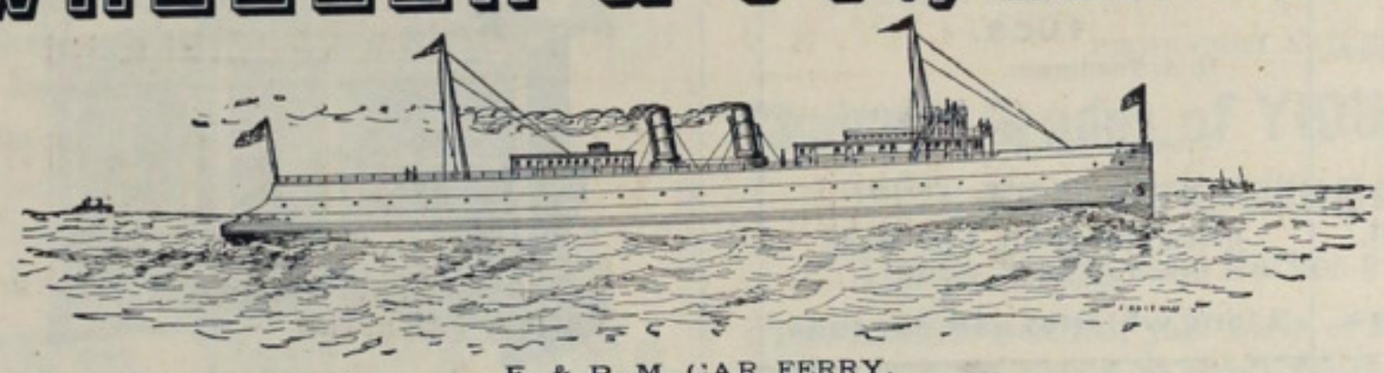

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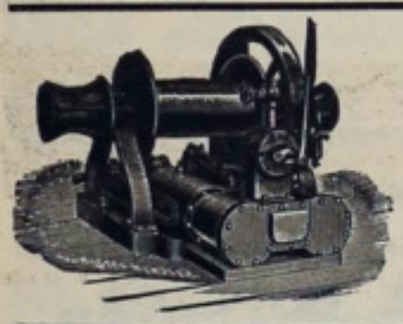

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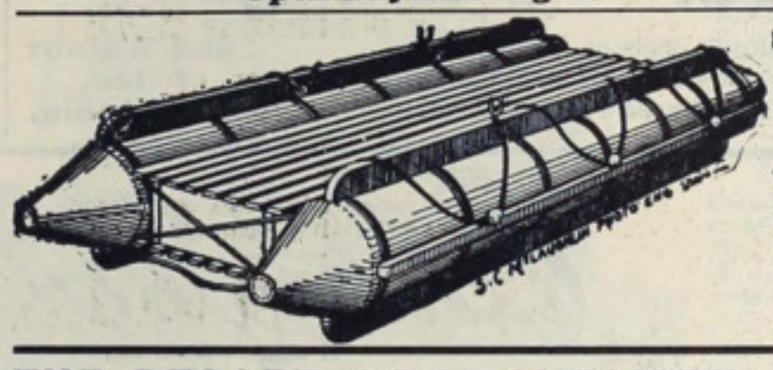

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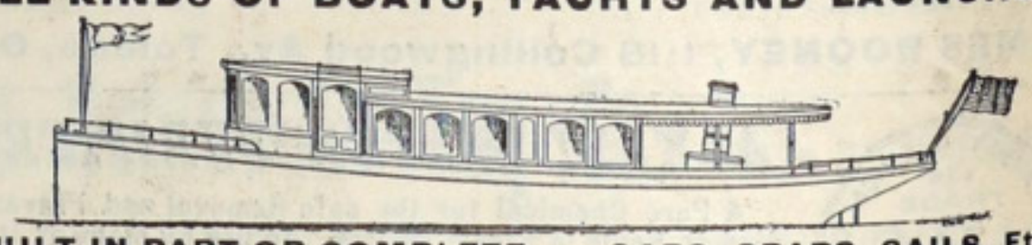

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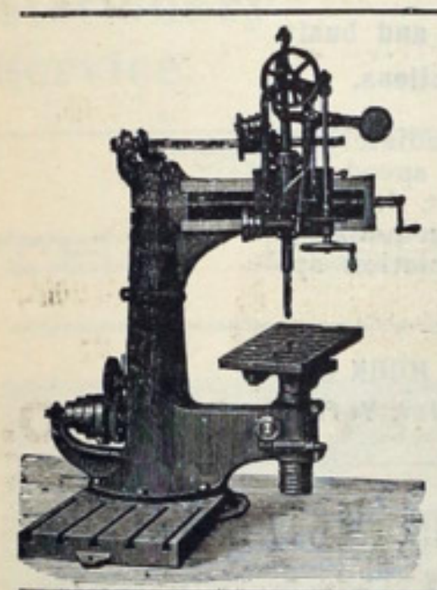

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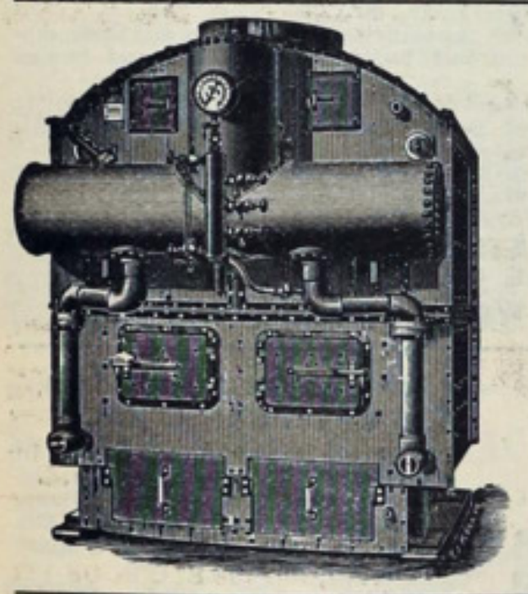

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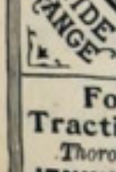

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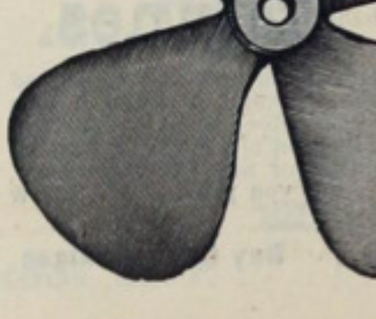

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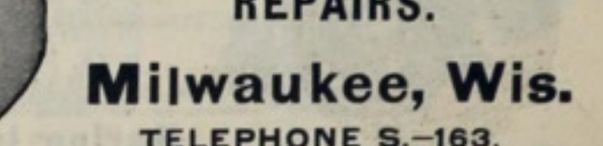

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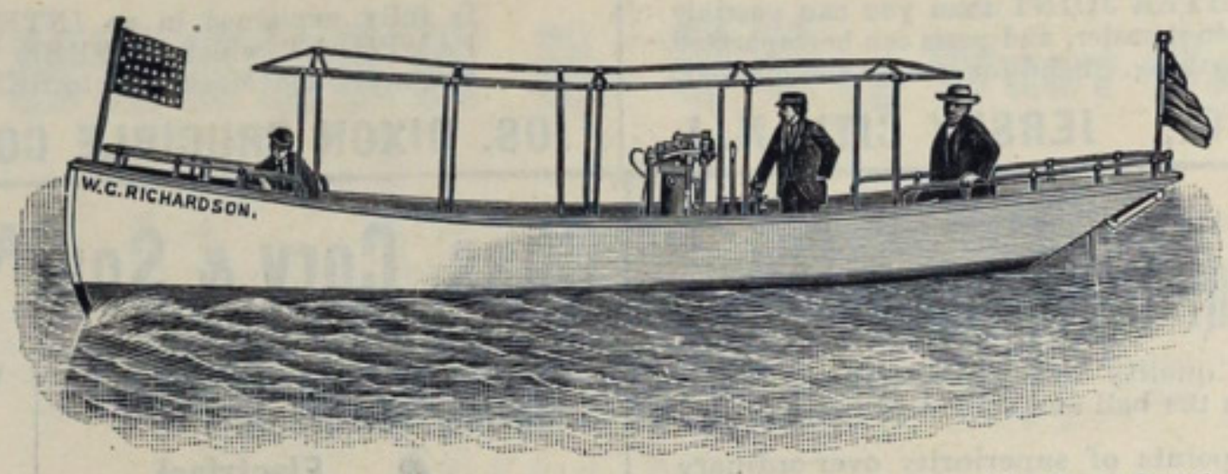

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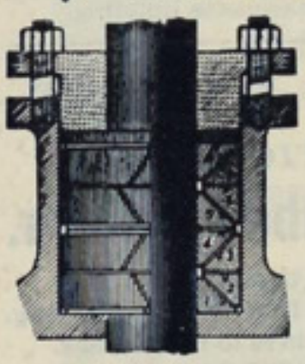

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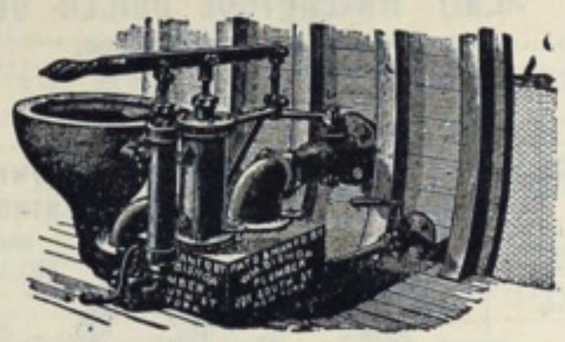

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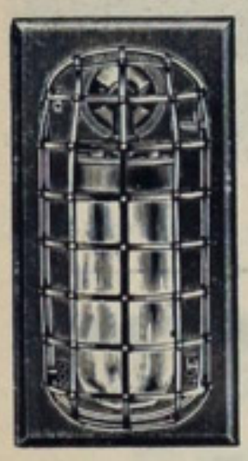

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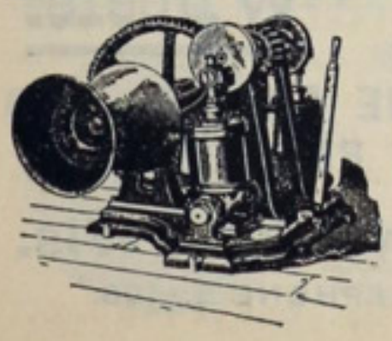

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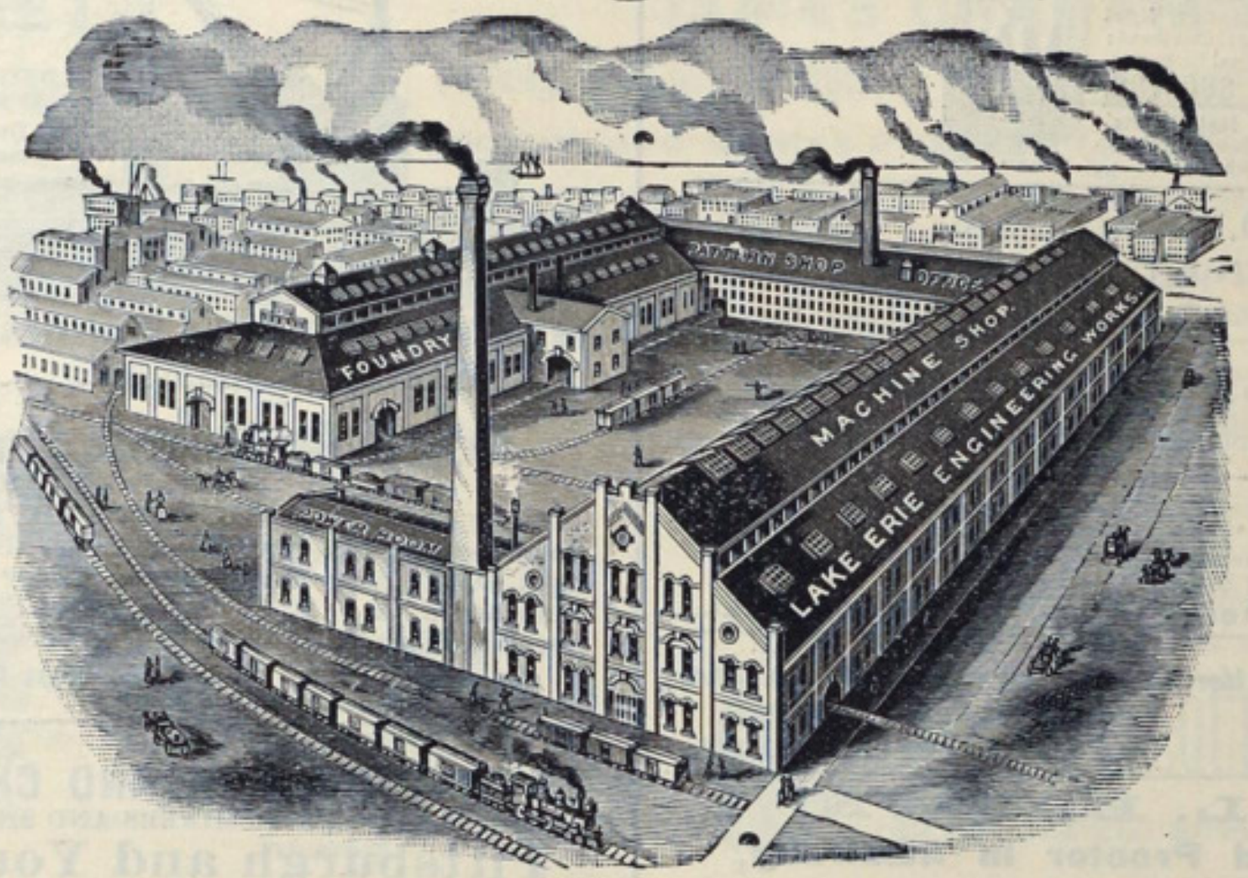

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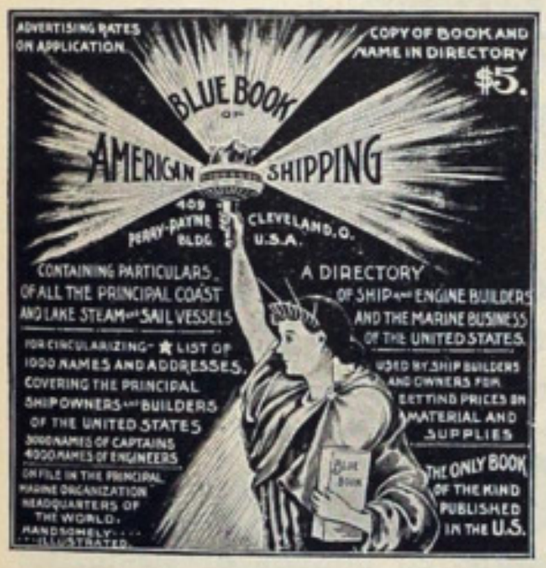
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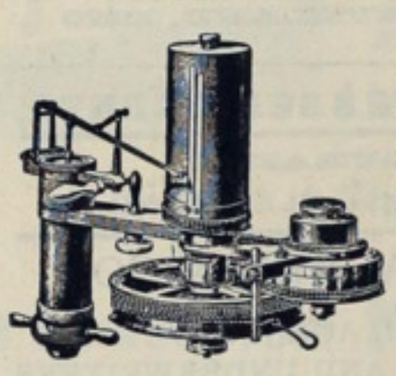

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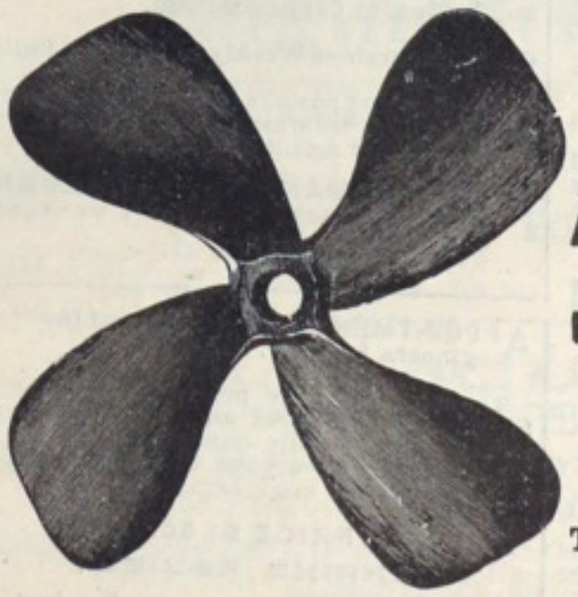

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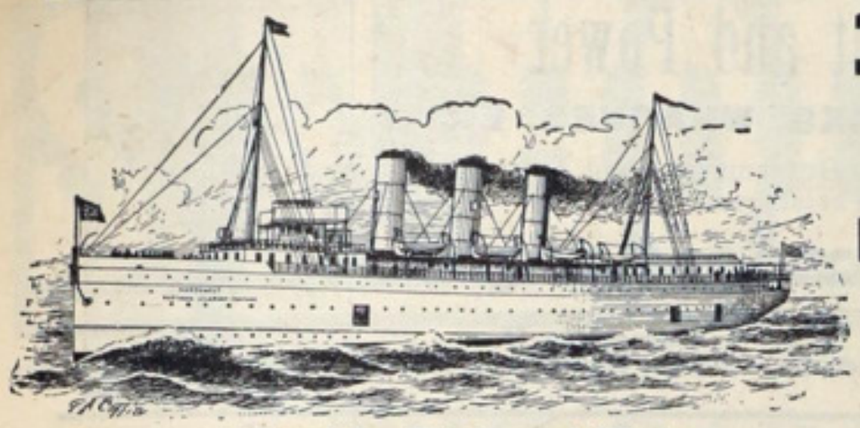

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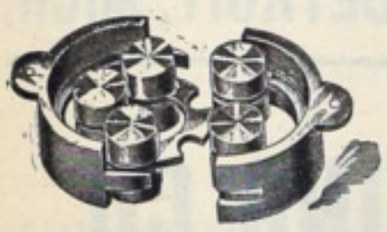

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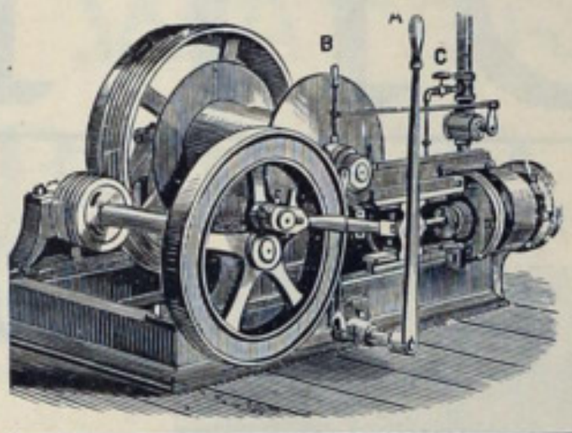

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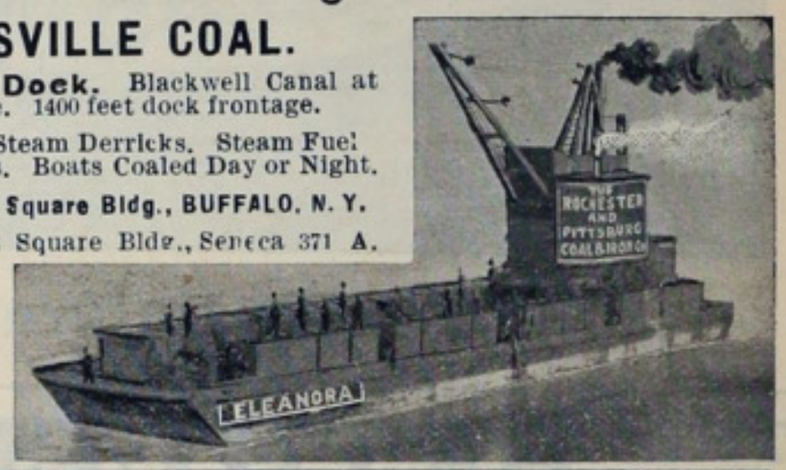

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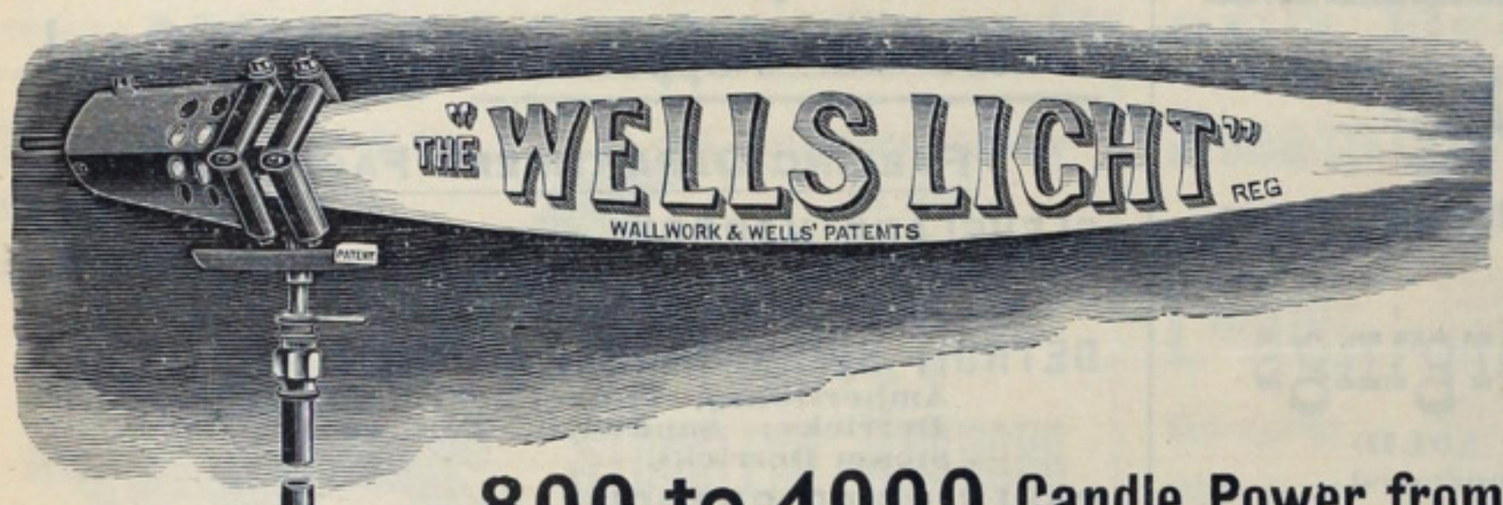

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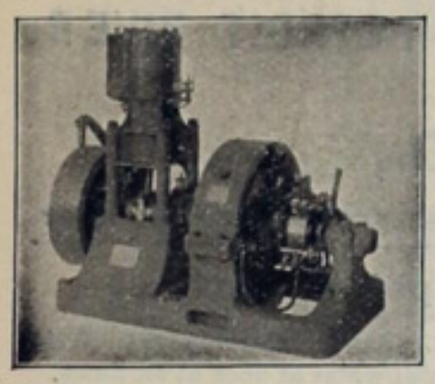

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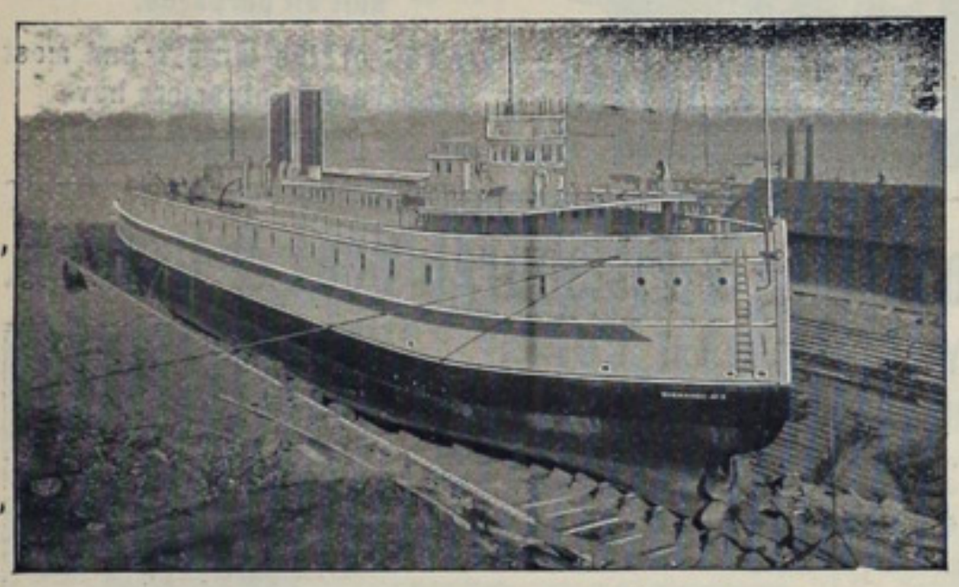

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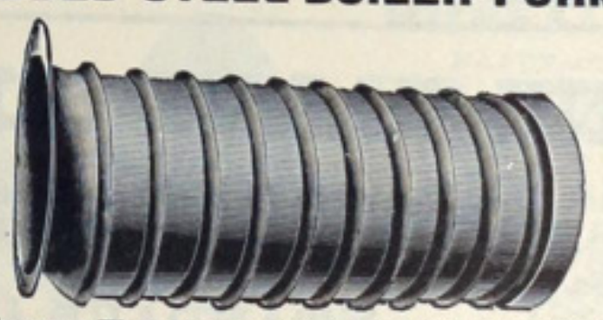

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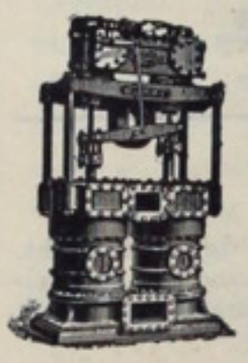

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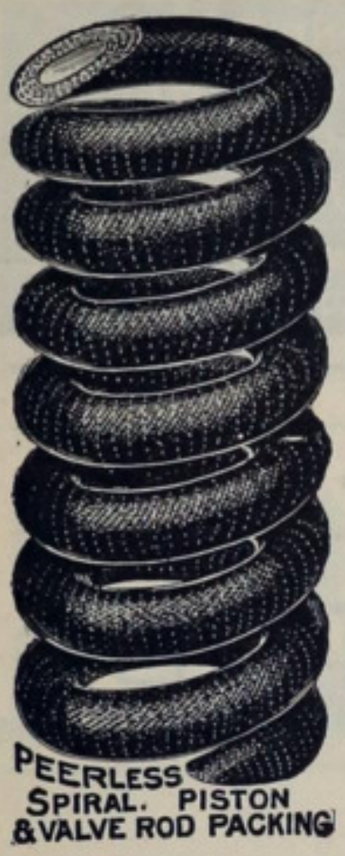

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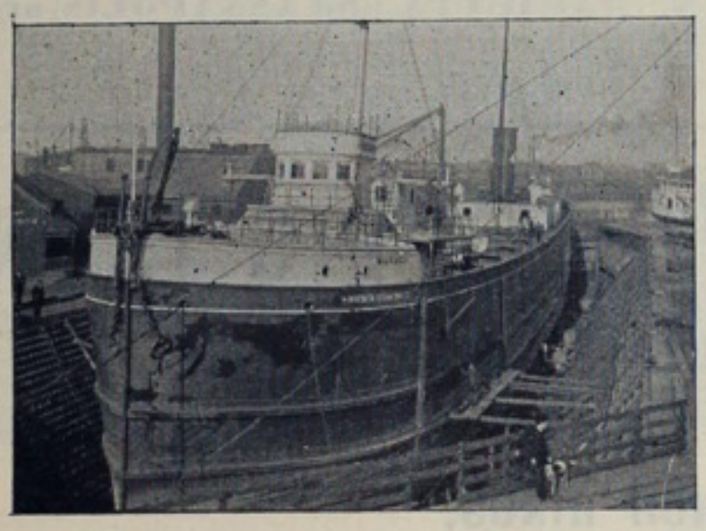

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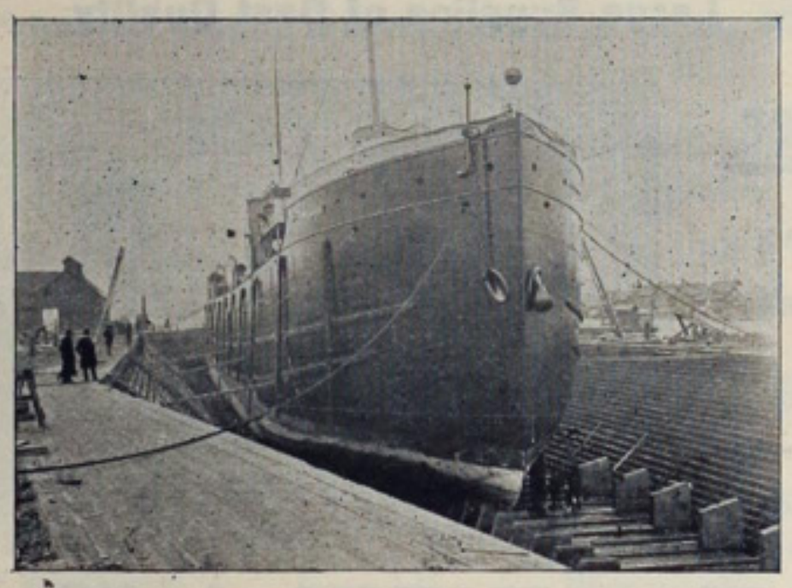

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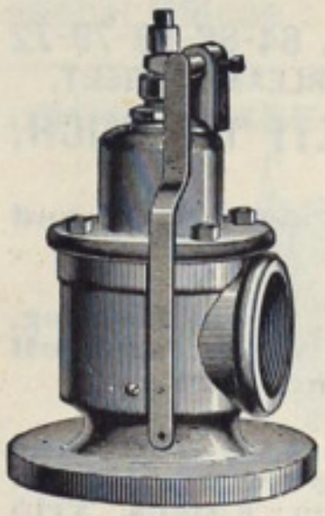

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